

WHAT IS CLAIMED IS:

1. A camera comprising:
a lens driving device including a lens holder that holds a lens and a
5 driving device that moves the lens holder in an optical axis of the lens,
wherein the lens holder is intermittently stoppable at least at two positions
in the optical axis direction of the lens; and
an image obtaining device that captures optical images of different
magnifications at the at least two positions, and obtains zoom images at least
10 between one of the optical images and the other of the optical images based
on at least one of the optical images and electronic images generated based on
the at least one of the optical images.

2. A camera according to claim 1, wherein the lens driving device
15 moves the lens holder to two positions, and the image obtaining device
captures first and second optical images of different magnification at the two
positions, and obtains zoom images between the first and second optical
images based on the first optical image and electronic images generated
based on the first optical image.

20

3. A camera according to claim 1, wherein the image obtaining
device obtains at least a wide angle image at a wide angle position, a
telephoto image at a telephoto position and an intermediate image at an

intermediate position between the wide angle position and the telephoto position, and the image obtaining device generates enlarged zoom images up to immediately before the intermediate position through processing the wide angle image and obtains enlarged zoom images past the intermediate position and up to the telephoto position through processing the image captured at the intermediate position.

4. A camera according to claim 1, wherein the wide angle image and the intermediate image are a wide angle optical image and an intermediate optical image captured by the image obtaining device, respectively, and the image obtaining device electronically processes the wide angle optical image and the intermediate optical image to obtain the zoom images.

5. A camera according to claim 1, wherein the image obtaining device obtains zoom images between one of the optical images and the other of the optical images based on both of the optical images and electronic images generated based on both of the optical images.

6. A camera according to claim 1, wherein the image obtaining device obtains enlarged zoom images based on one of the optical images and reduced zoom images based on the other of the optical images.

7. A camera according to claim 4, wherein the image obtaining device obtains zoom images between the wide angle optical image and the intermediate optical image, wherein the zoom images include enlarged zoom images generated based on the wide angle optical image and reduced zoom
5 images generated based on the intermediate optical image.

8. A camera according to claim 1, wherein the lens driving device stops the lens holder only at two places, and the image obtaining device captures the optical images at the two places.
10

9. A camera comprising:
a lens driving device having a lens holder that holds a lens, and a driving device that moves the lens holder in an optical axis of the lens; and
an image obtaining device that obtains zoom images at least through
15 continuous image processing between a wide angle position and a telephoto position of different magnifications,

wherein the lens holder is intermittently stopped at least at two positions to capture an optical image at the wide angle position and an optical image at the intermediate position, and the image obtaining device obtains
20 enlarged zoom images past the wide angle position and up to immediately before the intermediate position through electronically processing the optical image taken at the wide angle position and obtains enlarged zoom images past the intermediate position and up to the telephoto position through

electronically processing the optical image taken at the intermediate position.

10. A camera according to claim 9, wherein the lens driving device
5 stops the lens holder only at the wide angle position and the intermediate position, and the image obtaining device captures the optical images at the wide angle position and the intermediate position.

11. A camera according to claim 9, wherein the image obtaining
10 device obtains enlarged zoom images between the wide angle position and the intermediate position through electronically processing the optical images captured at the wide angle position and the intermediate position.

12. A camera according to claim 11, wherein the image obtaining
15 device further obtains enlarged images based on the optical image taken at the intermediate position and electronic images obtained through electronically processing the optical image taken at the intermediate position.

20 13. A camera comprising:
a lens driving device including a lens holder that holds a lens and a driving device that moves the lens holder in an optical axis of the lens, wherein the lens holder is intermittently stoppable at least at a first position

on a wide angle side and a second position on a telephoto side that provides a magnification greater than a magnification on the wide angle side; and

an image obtaining device that captures optical images with different magnifications and obtains zoom images between one of the optical images and another of the optical images based on the optical images with different magnifications and electronic images obtained by electronically processing the optical images,

wherein the image obtaining device captures an optical image at the first position and uses the optical image captured to form enlarged zoom images when an image enlargement zooming between the first and second positions is instructed, and captures an optical image at the first position and uses the optical image captured to form reduced zoom images when an image reduction zooming between the first and second positions is instructed.

14. A camera according to claim 13, wherein the image obtaining device includes a zoom instruction read device that reads a zoom instruction and an operational position confirmation device that confirms an operation position of the lens required for the zoom instruction.

15. A camera according to claim 14, wherein the lens holder is driven by the lens driving device to the operation position confirmed by the operational position confirmation device.

16. A camera according to claim 14, wherein the lens holder is not driven by the lens driving device when the operation position confirmed by the operational position confirmation device is a current position of the lens.

5 17. A camera according to claim 14, wherein the image obtaining device includes a current position detection device that detects a current position of the lens, and when the operation position is on the wide angle side, the current position detection device detects whether the current position of the lens is the first position, and the lens driving device moves the lens to the
10 first position to capture an optical image when the current position is not the first position, and does not move the lens such that the lens remains unmoved to capture an optical image if the current position is the first position.

15 18. A camera according to claim 17, wherein, when the operational position is on the telephoto side, the current position detection device detects whether the current position of the lens is the second position, and the lens driving device moves the lens to the second position when the current position is not the second position, and does not move the lens such the lens
20 remains unmoved to capture an optical image when the current position is the second position.

19. A camera according to claim 14, wherein, when the zoom

instruction read device receives a zoom instruction of an image zooming with an enlargement magnification, the image obtaining device moves the lens to the second position before the enlargement magnification reaches the optical magnification in the second position, captures an optical image in the second position in advance, then forms an image for displaying a second enlargement zoom image formed base on the optical image captured in the second position after displaying a first enlargement zoom image formed base on the optical image captured in the first position, such that enlarged zoom images between the first position and the second position are obtained based on the first zoom image and the second zoom image.

20. A camera according to claim 19, wherein the second zoom image is obtained by placing an enlarged image obtained by electronically processing the optical image captured in the first position on a peripheral area of the optical image captured in the second position.

21. A portable equipment with camera comprising:
a camera recited in claim 1; and
a display device for displaying images obtained by the camera.

20

22. A portable equipment with camera comprising:
a camera recited in claim 9; and
a display device for displaying images obtained by the camera.

23. A portable equipment with camera comprising:
- a camera recited in claim 13; and
 - a display device for displaying images obtained by the camera.